

# PATENT SPECIFICATION

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## (54) METHOD OF TREATING BOTTLE CORKS

(71) We, GRANTS OF ST. JAMES'S LIMITED, a British Company, of 87 Station Street, Burton-on-Trent, Staffordshire, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention concerns a method of treating bottle corks.

In the bottling of wines, spirits and similar beverages, corks, which are very commonly used to retain the liquid, frequently allow seepage of liquid between the glass of the bottle neck and the cork surface and also penetration of liquid into the interior pores of the cork. This often leads to deterioration of the cork and contamination of the contents of the bottle. In addition the consequent staining of the cork is often unsightly.

It has previously been proposed to overcome this problem by dipping the corks in molten paraffin wax before the bottle-corking operation but it is found that the wax coating frequently peels off the cork allowing seepage of the contents as before and contaminating the wine with wax particles. In addition, the wax frequently seals the cork into the bottle and makes withdrawal difficult.

It has now been found that corks can be sealed very effectively by treatment with organosilicon compounds, and especially with a silicone oil, rather than with a high melting paraffin wax. Corks which have been treated with an organosilicon compound are not only resistant to seepage and penetration but are easier to withdraw from the bottle. Furthermore in storage and baling of the corks prior to bottling, reduction of friction also reduces the undesirable cork particles and dust which are normally produced.

According to the present invention there is provided a method for the improvement of the ability of corks to retain liquids within bottles in which at least the surface of said

corks is treated with an organosilicon compound.

According to a further feature of the invention we provide corks having improved ability to retain liquids within bottles said corks carrying an organosilicon compound in at least the surface thereof.

The corks to be treated may be any corks of use in bottling, for example natural, untreated corks, water washed corks or corks which have been bleached, washed in oxalic acid and rinsed in clean water. The organosilicon compound is preferably a silicone oil, for example a methyl or methyl phenyl polysiloxane or a linear dimethyl polysiloxane.

The corks may be treated with an emulsion of the organosilicon compound in an aqueous medium e.g. at a concentration of 0.5 to 5.0% by weight or with a solution of the organosilicon compound, e.g. at a concentration of 0.5 to 5.0% by weight, in a volatile organic solvent such as a hydrocarbon or halogenated hydrocarbon solvent, for example, a light petroleum or trichloroethylene.

The treatment with the organosilicon emulsion may be effected in a number of ways. It is preferred to penetrate the lenticels of the cork to some extent and to this end a relatively dilute emulsion is advantageous. It has been found that a 1% by weight emulsion of a methyl polysiloxane is particularly suitable and is readily obtained by diluting 1 part of the product Silcolapse 437 (Registered Trade Mark) (marketed by Imperial Chemical Industries and containing 30% by weight of methyl polysiloxane together with emulsifying and stabilising agents) with 29 parts water.

In the case of the solutions of silicone oils in organic solvents, linear dimethyl polysiloxane and phenyl methyl polysiloxane may be used, for example in the viscosity range 100—10,000 cs (25°C), conveniently about 1000 cs.

The corks may, for example, simply be soaked in the 1% emulsion, for example for

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30 to 60 minutes, followed by drying, e.g. in a tumbler drier or other hot air drier or in the sun. For greater penetration, the corks may be immersed in the emulsion in a sealed container and a vacuum applied for a period, e.g. about 10 minutes. It is also possible to apply vacuum to the corks in the container in the dry state to remove air from the pores and then to add the emulsion under vacuum to replace the removed air.

If sterile corks are required, a preservative such as sodium metabisulphite or sulphur dioxide may be added to the emulsion or solution and such sterile corks may then be packed in hermetically sealed sterile containers, e.g. polythene bags.

It is also possible to spray the corks with the organosilicon emulsion.

When using a solution of the organosilicon compound in an organic solvent, the corks are preferably impregnated by dipping. Thus, for example, corks may be dipped for 1—2 minutes into a 1% solution of a linear dimethyl polysiloxane in white spirit or trichloroethylene followed by draining, e.g. for 5—10 minutes, and drying e.g. in the sun or in a solvent recovery plant.

For a better understanding of the invention, the following example is given by way of illustration only:—

#### EXAMPLE

One gallon of concentrated silicone emulsion, "Silcolapse 437" (Registered Trade Mark), containing 30% silicone solids and obtainable from Imperial Chemical Industries Ltd., is diluted with 29 gallons of water in a suitable container, e.g. 2ft. x 2ft. x 3ft. high.

The washed and dried corks measuring approximately 24 mm. in diameter, 44 mm. in length and weighing about 3 grams are placed in a polythene or nylon mesh bag, immersed in the emulsion, and kept there for a minimum of 10 minutes and up to 60 minutes. A weight is placed on the top of the corks to keep them covered with the emulsion. Following the immersion period, the corks are removed from the emulsion and allowed to drain for 5 minutes. The above operations are carried out at ordinary temperatures and pressures.

The corks are then removed from the mesh bag and emptied into a tumbler drier, operating at a temperature of 130°F—150°F, and dried for about 10 minutes to half an hour to a moisture content of about 4%. The corks are then placed in a polythene bag and sealed. They are now ready for use.

#### WHAT WE CLAIM IS:—

1. A method for the improvement of the ability of corks to retain liquids within

bottles in which at least the surface of said corks is treated with an organosilicon compound.

2. A method as claimed in claim 1 in which the organosilicon compound is a silicone oil.

3. A method as claimed in claim 2 in which the silicone oil is a methyl or methyl phenyl polysiloxane or a linear dimethyl polysiloxane.

4. A method as claimed in any of the preceding claims whereby the corks are treated with an emulsion of the organosilicon compound in an aqueous medium or with a solution of the organosilicon compound in a volatile organic solvent.

5. A method as claimed in claim 4 in which organosilicon compound in the emulsion or solution is at a concentration of 0.5 to 5% by weight.

6. A method as claimed in claim 4 or claim 5 in which the solvent is a hydrocarbon or halogenated hydrocarbon solvent.

7. A method as claimed in claim 6 in which the solvent is a light petroleum or trichloroethylene.

8. A method as claimed in claim 5 in which the emulsion is a 1% by weight emulsion of a methyl polysiloxane.

9. A method as claimed in any of claims 1—7 in which a silicone oil in the viscosity range of 100—10,000 cs (25°C) is used in solution in an organic solvent.

10. A method as claimed in any of claims 1 to 5 and 8 in which the corks are treated by soaking in an aqueous emulsion of the organosilicon compound followed by drying.

11. A method as claimed in claim 10 in which the corks are soaked in the emulsion for 30 to 60 minutes.

12. A method as claimed in claim 10 or claim 11 in which for greater penetration of the emulsion into the corks the corks are immersed in the emulsion in a sealed container and a vacuum applied for a period.

13. A method as claimed in claim 10 or claim 11 in which a vacuum is applied to the corks in a sealed container in the dry state to remove air from the pores and the emulsion is added under vacuum to replace the removed air.

14. A method as claimed in any of claims 1—7 in which the corks are dipped in a solution of an organosilicon compound in a volatile organic solvent and subsequently drained and dried.

15. A method as claimed in claim 14 in which the corks are dipped for 1—2 minutes.

16. A method as claimed in any of claims 4, 5 and 8 in which the corks are sprayed with the organosilicon emulsion.

17. A method as claimed in any of

claims 4—16 in which a preservative is added to the emulsion or solution.

18. A method for the improvement of the ability of corks to retain liquids within  
5 bottles substantially as described herein.

19. A method for the improvement of the ability of corks to retain liquids within bottles substantially as described herein with reference to the Example.

10 20. Corks whenever treated by a method as claimed in claim 1.

21. Corks having improved ability to retain liquids within bottles said corks carrying an organosilicon compound on at least the surface thereof.

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